

### REMARKS

The Examiner is thanked for acknowledging the filing of the Request for Continued Examination.

In paragraph 4 of the Office Action, claims 1, 3-6 and 8-15 were rejected under 35 U.S.C. §103(a) as being obvious from Inda et al. (Inda)

Reconsideration is requested.

The Inda patent was applied as teaching a lithium ion conductive glass-ceramic composite electrolyte for a lithium battery having an electrolyte layer with a thickness of less than 100µm. The Examiner concluded that it would have been obvious to make the electrolyte layer less than 20 µm thick even though no reference as cited in support of that contention. In response, claim 1 and all of the claims dependent on claim 1 have been amended to recite that the solid electrolyte is free of any organic electrolyte solution as disclosed in the specification at page 20, lines 17-20.

In the Inda patent, it is mainly the electrolyte that carries out ion conduction and since the electrolyte has a high ion conductivity, it is not necessary to reduce the thickness of the electrolyte to 20µm or less. In the specification at page 1, beginning at line 19 and extending over to page 2, line 5, it was disclosed that a gel polymer electrolyte required a minimum thickness in order to have sufficient mechanical strength to avoid breakage or hole formation and this thickness was 30-80 µm. The Inda patent disclosed that the reason for making the electrolyte with a thickness of 100µm or below is to secure a broad area of electrolyte per unit volume but does not disclose that the purpose of reducing the thickness of the electrolyte is to reduce the resistance to ion conduction (Cf. col. 3, lines 10-16). The Inda patent does not disclose any example of an electrolyte that has a thickness of less than 50 µm.

In contrast, the claimed lithium ion secondary battery of the present invention is made of a solid electrolyte which has no electrolyte solution at all for reasons of safety. In order to solve the problem that ion conductivity is reduced in a solid electrolyte in comparison to where an electrolyte solution is used, the electrolyte of the present invention comprises a lithium ion conductive crystal or lithium ion conductive glass-

ceramic. It has been found that in the case of the solid electrolyte of the present invention which employs the lithium ion conductive crystal or the lithium ion conductive glass-ceramic, it has been necessary to use as the solid electrolyte, one having a thickness of 20 $\mu$ m or below. This is not suggested by the prior art.

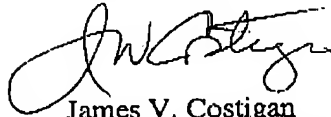
The Examiner is asked to consider the data of Example 3 where a battery having a solid electrolyte of 0.1 $\mu$ m in thickness was produced and was found to have good electrical properties. Nothing in the Inda patent suggests the use of a solid electrolyte having a thickness of less than 20 $\mu$ m that is free of any organic electrolyte solution as pointed out in amended claim 1. For these reasons, it is requested that this ground of rejection be withdrawn.

Claims 16 and 17 were rejected under 35 U.S.C. §103(a) as being unpatentable over Inda in view of Kozuzu et al. (Kozuzu).

The Inda patent has been distinguished above as not teaching a solid electrolyte having a thickness of less than 20 $\mu$ m that is free of any organic electrolyte solution. The lithium ion alloy disclosed in the Inda patent at col.5, lines 26-29 is an electrode active material for intercalating the lithium ion. The Kozuzu patent discloses a material containing a silicon base having a particle size of 0.1 $\mu$ m to 0.5 $\mu$ m which is used as an electrode active material for intercalating lithium ion. Claims 16 and 17 of the present application, point out a lithium ion conductive inorganic powder which is part of the electrode materials and functions as an ion conductor in the electrode. For these reasons, it is apparent that the powder disclosed by Kozuzu and the powder as defined in claims 16 and 17, perform entirely different functions. For these reasons, the combination of the Inda patent and the Kozuzu patent does not make the claimed subject matter obvious and it is requested that this ground of rejection be withdrawn.

An early and favorable action is earnestly solicited.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read 'J. Costigan', written over a horizontal line.

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